

“The Economics of Goat Farming in a Changing Kentucky Landscape”

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Over the past two decades goat production in Kentucky has been an all over the place venture. Prices up, prices down, production up and production down are common taglines when referring to the state's goat industry. It's been a bumpy ride for sure. The majority of producers raise goats for slaughter (meat market), breeding, fiber and land management (USDA-NIFA, 2007). The preference to raise and market goats is because of their ability to graze for longer periods, tolerance to weather, low housing costs, and lower cost of feeding than other livestock such as cattle (Benedict & Berdikul, 2016). Currently, Kentucky has five primary stockyards for goat producers: Bluegrass Stockyards in Richmond, KY, United Producers, Inc in Bowling Green, KY, Western Kentucky Auction Barn in Mayfield, KY, Paris Stockyards in Paris, KY, and Washington County Graded Sheep and Goat Sale in Springfield, KY (USDA-AMS, 2020).

Almost 20 years ago there were at least 70,000 goats and 2,500 producers across Kentucky with an average flock size of about 26 goats, (Skillman (2003). The Kentucky Farm Bureau (2015) reported in the mid-2000s that the top goat producing counties in Kentucky were Hart, Hardin, Warren, Christian, and Pulaski with an aggregate state inventory of approximately 65,000 goats. In the last USDA Agricultural Census (2017), the total number of farms (4,330) in Kentucky raising goats increased since the 2012 USDA Agricultural Census (3,797) while the total goat population decreased from just over 64,000 goats to just under 60,000 head. Although there is a decrease in overall production, the market remained strong whereby total sales increased over \$450,000 dollars and Warren, Crittenden, Barren, Shelby, and Hart counties were the highest producing counties (USDA-NASS, 2017). Economic research suggests large-sized goat farms are more likely to have lower costs and greater margin of return per head than small and medium sized farms (Benedict & Berdikul, 2016).

In a commercial meat goat herd, in Kentucky and the surrounding area, management should be on a forage basis.

This indicates grazing/browsing during the growing season (usually April to November) and feeding stored forages with some supplementation through the winter and early spring. Our forage production potential, under most management and soil fertility, is between 3 and 5 goats per acre. This should be the minimum point for consideration on management practices. The value of this land has to be considered along with the labor to manage. The value should be based on the pasture rental rates, as that is what you should be able to receive for it if you were not grazing it yourself. The 2018 land rental rates for pasture range from \$25 to \$55 per acre in Kentucky depending on the land productivity (Halich, et al. 2018). During the time of year that you will be feeding stored forage, a goat will consume 4 to 8 lbs. of hay per day and waste about another 1 to 2 lbs. Because of this you need to figure a minimum of 6 lbs. of hay per head per day. Feeding methods and quality impact this amount.

During lactation the doe will need additional supplementation to meet nutritional needs. This can generally be met by feeding 2 to 3 lbs. of supplemental feed for 60 to 85 days. You will need to reduce her supplement before weaning to help with dry off. Kids are generally going to be creep fed between 60 and 80 days as well depending on forage condition and quality. During both of these times, an 18% Crude Protein diet should be used and it should be balanced to meet the needs of the animal.

In a farm business, really any business, a primary goal should be sustainability as result of minimizing cost and maximizing profit. Janke (2000) frames farm sustainability through the lens of whole-farm planning for profitability and better long-term management. Sustainability and farm planning are critical when the USDA's Economics Research Service (2020) estimates the average Net Cash Farm Income (NCFI) for farms across the country is expected to decrease in 2020 by a minimum of 4.4 percent. A goat farm operation can measure sustainability and profitability in a number of ways: income above variable cost, income about fixed costs, profit per head, profit per month, profit per acre, profit from milk production (dairy goats), and return on

assets (Mendell, 2020). He went on to suggest that four major determinants that influence the profitability of a goat producer are feed cost, the percent kid crop, veterinary care, and market prices. For example, producers that learn how to make their own feed and maintenance their own animals can better manage feed and veterinary cost. In sum, utilizing strategic management and sustainable economic approaches can lower herd risks and increase profit potential.

Below is a sample enterprise budget for a 20 doe / 1 buck meat goat operation to estimate economic returns and consider ways a producer can implement strategic management of input costs to increase profit potential. In the budget we planned for a 187% kidding rate. About 55% of the kids would be sold an average of 45 lbs. and the other 45% would be heavier at an average of 65 lbs. at marketing shortly after weaning. We based the price for the kids and cull does off the Kentucky Market reports to get a good general average price of \$2.30/lb. for the heavier kids, \$2.74/lb. for the lighter kids.

Table 1 shows the annual cost of this enterprise based on estimated information in extension publications and contact with market reports for feed and other cost. Table 2 shows the revenue expected to be generated based on the estimated prices and expected average weights and number of animals. Table 3 is the expected returns for the enterprise. The budget is based on the UK and KYSU Meat Goat Enterprise Budget.

As can be seen from this budget analysis, a small profit is possible. However, the profit margin is low under these conditions. Feeding cost are very variable between herds at this time and this makes the small margin very critical in the overall analysis. Any increase in cost will need to result in significant income change to result in a benefit to the producer. The kid weights are averages and are possible, but price does vary based on weight at the sales. This can also impact the possibility of a profit for a meat goat herd.

With careful management it is possible for someone to be profitable in meat goats on a small scale, however the margin is very small. There are different production systems, and marketing options available, the ones examined here are the most common in the

Table 1. Sample Budget for 20 Head Meat Goat Flock.

Item	\$ per unit	Units	Per Doe	Per Herd
Variable Cost				
Pasture	\$30	0.33 acres	\$9.90	\$198
Hay	\$75	0.25 tons	\$18.75	\$375
Feed	\$0.29	108 lbs.	\$31.32	\$626
Mineral Mix	\$0.40	20 lbs.	\$8.00	\$160
Vet and Med	\$10	Per head	\$10	\$200
Breeding/buck	\$10	Per head	\$10	\$200
Bedding	\$3	Per head	\$3	\$600
Marketing/haul	\$9	Per head	\$15.06	\$301
Maintenance	\$6	Per head	\$6	\$120
Misc. Supplies	\$5	Per head	\$5	\$100
Interest	6%	\$115.03	\$6.90	\$138
Total Variable Cost			\$121.93	\$2,438.57
Fixed Cost				
Depreciation			\$2.17	\$4,339
Tax & Insurance			\$10.00	\$200
Operator/family/labor	\$8	10 hours	\$80	\$1,600
Total Fixed Cost			\$95	\$1,900
Total Cost of Operation			\$216.93	\$4,338.57

Table 2. Revenue from 20 doe herd.

Type of animal	#	Avg. WT	Market price	Per Doe	Per Herd
Heavy Kids	14	65 lbs.	\$2.30/lb.	\$104.65	\$2,093
Light Kids	17	45 lbs.	\$2.75/lb.	\$103.08	\$2,062
Cull does	3	110 lbs.	\$1.60	\$24.64	\$496
Total revenue				\$232.37	\$4,647.48

Table 3. Returns over cost from 20 head goat herd.

	Per Doe	Per Herd
Returns over Variable Cost	\$110.45	\$2,438.57
Net expected returns	\$15.45	\$308.90

state. We encourage everyone to use this as a basic template. If you are able, put your own information in the budget template based on your records. You need good records to know what is actually being used and the cost. Also, do not forget the cost for pasture and hay produced on the farm as these do have a cost to you so, be realistic. Labor, even family labor, needs to be included to be honest in the value of that labor. If you can work for pay doing the work, you need to include it here.

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